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### (54) Low ammonia bleach compositions

(57) A thickened hair bleaching composition which produces only trace amounts of ammonia gas when applied to the users hair, having a water phase accounting for 80 to 100% of the total weight of the composition and an ammonium ion concentration in the water phase which is less than about 0.55% of the total composition which comprises 2-20% of a per-compound, 1.5-7% of hydrogen peroxide, an amine or quaternary ammonium compound, 4-8% of at least one water-soluble surfactant thickener, a buffering agent for maintaining the composition at a pH of from about 9 to 12, and the balance is water. The composition can contain additional ingredients including a sequestering agent, a viscosity modifier and a water-insoluble surfactant thickener.

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### **SPECIFICATION**

#### Low ammonia bleach compositions

5 This invention relates to hair bleaching compositions containing a high degree of water-soluble surfactants and water-soluble compounds, and reduced levels of ammonium ions in the water phase thereby providing substantially reduced ammonia gas production and a more aesthetically pleasing result.

Any process relating to the treatment of hair must take into account a large number of variables.

Bleaching is basically a process to remove natural color from hair. The hair color, i.e. the degree of hair lightening desired by a patron may vary from the mere highlighting of hair through to the palest blonde. Bleaching compositions must therefore be capable of producing mild lightening to high lightening and all degrees of lightening in between. In addition, an entire head of hair may be bleached or only portions thereof, i.e. new growth or "root areas".

Bleaching compositions for streaking, frosting, or tipping may be self applied or operator assisted to gain special blonding effects.

Bleaching compositions used on hair differ from those used with textiles, fabrics, hard surface cleansing and the like in that hair bleaching compositions, in addition to oxidizing and destroying the colored melanin of the hair, must be suitable for use in con-30 tact with the human skin and must not damage the hair excessively. Furthermore, since hair bleaches are a member of the class of materials known as cosmetics, it is desirable that they be aesthetically acceptable to the user. Finally, it is desirable that a 35 hair bleaching composition remove the melanin coloration from the hair as efficiently as possible, both for the sake of convenience and to help prevent damage to the hair and irritation to the skin and scalp. Most bleaching systems required exposure to 40 the hair for periods from a few minutes to as long as about 2 to 3 hours, depending upon the desired degree of bleaching.

Hair bleaches commonly consist of a peroxide oxidizing agent, bleach enhancing agents, and a var45 iety of additional cosmetic and bleach stabilizing agents. Oxidizing agents such as the various hypochlorites and halogenated cyanuric acid compounds suitable for use on hard surfaces and in fabric bleaching are not suitable for use on hair since they or too damaging and too irritating to the skin. Peroxide bleaches used on hair must be "activated", this being accomplished by the use of an "activating" agent to adjust the pH to a basic range. The most common material for adjusting the pH of peroxide hair bleaching compositions is an aqueous solution of ammonia, commonly referred to as ammonium hydroxide.

The prior art discloses that aqueous solutions of certain compounds, namely hydrogen peroxide and 60 hydrogen peroxide generating compounds such as peroxy compounds, e.g. persulfates, perborates, percarbonates, are effective in bleaching human hair or keratinous materials. In an effort to increase the rate of bleaching with these hydrogen peroxide pro-65 ducts, an activator is used in conjunction with the

hydrogen peroxide, the activator generally being an ammonium, an alkali metal hydroxide or an alkali metal hydroxide producing compound.

Hair lightening lotions used in two and three component systems typically contain between 2 and 5.5% by weight ammonium hydroxide. Generally, at least half this amount is unneutralized and is present in the lotion as NH₃·H₂O. Because of the high concentration of neutralized and unneutralized ammonium ion bleach systems currently in consumer use today have a characteristic ammonia odor. As a result, bleach mixtures are not as aesthetic to use as other cosmetic preparations.

However, if ammonia or ammonium hydroxide is replaced by a higher molecular weight less volatile amine, the resulting bleach mixture is more damaging (for the same degree of lightening) to the keratine hair fibers. For example, U. S. Patent 2,283,350 to Baum discloses the use of aliphatic amines and hydroxyaliphatic amines as substitutes for ammonium hydroxide in hair bleaching compositions. Moreover, U. S. Patent 3,816,615 to Zeffren et al discloses hair bleaches containing guanidine compounds in place of ammonium hydroxide.

Furthermore, to be effective, a bleach composition 90 must remain in place for the time required to effectively lighten the hair, retaining while in place, the proper alkalinity and moisture content needed to continue the bleaching action. The bleach composition must form a foam of limited height and of sufficient viscosity to hold in contact with the hair the bleaching constituents and the oxygen released. The conventional bleaching compositions known in the art accomplish this by incorporating significant quantities of various types of water-insoluble thickeners, oils and fillers. For example, U.S. Patent 3,651,209 to Cohen describes the use of calcium carbonate, magnesium carbonate, plaster of Paris and other inert fillers such as talc, kaolin and bentonite as 105 suitable thickening agents for bleaching compositions. "White henna" (i.e. mixtures of magnesium carbonate and magnesium oxide, magnesium trisilicate or the like) and other insoluble adsorbent materials have also been described as useful aids to build 110 viscosity in bleaching compositions.

Hair lightening lotions presently in use are additionally known to contain substantial quantities of water insoluble esters, alcohols, ethoxylates and/or propoxylates to create viscosity. The most common 115 alcohol used is the C<sub>18</sub> oleyl derivative. The water insoluble surfactants form gels when the lotion is mixed with aqueous peroxide solutions. The water insoluble gel helps keep the bleach mixture on the hair fibers and prevent it from running or creeping 120 away from the hair shaft. The use of water insoluble surfactants, however, greatly affects the lightening ability of the bleach mixture. To overcome reduced bleaching activity, high levels of ammonia are required. Studies have shown that as the surfactant becomes more water insoluble, the lightening ability of the bleach system decreases. The functional grouping of the surfactant appears to have little effect upon the efficiency of the resultant bleach mixture as long as water solubility is maintained.

30 Accordingly, to provide an improved peroxygen

bleaching composition producing very little
unpleasant ammonia odor and having the proper
consistency throughout the bleaching operation to
provide good lightening results while holding the
amount of hair damage incurred by bleaching to an
acceptable minimum level, it has been surprisingly
found that this can be attained by keeping both
water insoluble ingredients and amine levels to a
minimum. As a consequence, lightener lotion formulations should contain surfactants which form soluble gels when mixed with peroxides and/or persulfates. The above criteria for solubility/gel formation
places practical restrictions on the type of surfactants that can be used.

15 Accordingly, one aspect of the invention to be disclosed herein is a thickened hair bleaching composition comprising:

(a) 2 to 20 weight percent of at least one percompound selected from the group consisting of an
 20 ammonium-, alkali metal- and alkaline earth metal-perborate, persulfate, percarbonate, and carbonate peroxide;

(b) 1.5 to 7 weight percent of hydrogen peroxide;
(c) an amine or quaternary ammonium compound
25 selected from the group consisting of ammonium hydroxide, morpholine, mono-, di-, and trial-kanolamine, and mono-, di-, and trialkylamine, wherein the alkyl or alkanol substituents have a carbon chain length of 1 to 4 carbon atoms;

 (d) 4-8 weight percent of at least one water-soluble surfactant thickener;

(e) a buffering agent for maintaining the composition at a pH of from about 9 to 12; and

(f) the balance is water, wherein the ammonium 35 ion concentration in the water phase is less than about 0.55 weight percent based on the total composition resulting in substantially only trace amounts of ammonia gas produced as a result of interaction of these ingredients with each other or 40 with hair.

Additionally, the composition according to the invention can contain, respectively, up to about 0.5 weight percent of a sequestering agent, 1.5 weight percent of a viscosity modifier, and 20 weight per-45 cent of at least one additional water-insoluble ingredient selected from the group consisting of surfactants, perfumes, oils, opacifiers, and dyestuffs.

Preferably, the composition according to the invention can contain, respectively, about 6-8 weight percent of the percompound, 3.2-3.7 weight percent of hydrogen peroxide, and include as the water-soluble surfactant thickener the 8.5 mole ethoxylate of cocoyl fatty acid. Additionally, the pH of the resulting composition is preferably about 9.7 to 10.3.

The water-soluble surfactant thickener can be selected from the group consisting of:

(a) an alkylene glycol or an alkylene glycol ether alcohol of the formula:

R°O(R°O),R°OH

60 wherein R<sup>6</sup> is H or alkyl having 1 to 4 carbon atoms and R<sup>6</sup> and R<sup>7</sup> are divalent alkylene radicals having 2 to 4 carbon atoms and n is a number from 0 to 150;

(b) a long chain fatty acid soap of the formula (R°COO), M

65 wherein R° is the hydrocarbon moiety of a long chain

fatty acid having 10 to 20 carbon atoms, M is a monovalent or polyvalent salt-forming group and "A" is the valence of group M;

(c) a long chain polyoxyalkylated compound
 selected from the group consisting of a polyoxyalkylated long chain fatty alcohol, a polyoxyalkylated polyhydroxyalkyl ester of a long chain fatty acid; a polyoxyalkylated long chain amine; a polyoxyalkylated long chain fatty acid; a polyoxyalkylated long chain fatty acid amide; a polyoxyalkylated long chain alkylphenol and polyoxyalkylated laurate esters of sorbitol and its anhydrides containing about 8 to 300 oxyalkyl groups in the structure; and
 (d) mixtures thereof.

80 The thickened hair bleaching compositions in accordance with the invention herein generally have a viscosity in the range of 5000 to 100,000 centipoises.

As was previously mentioned, it is commonly 85 accepted practice to incorporate an amine or quaternary ammonium compound in a peroxygen bleaching system to provide activation in the bleaching process.

Bleaching studies have surprisingly indicated that
very good lightening, resulting in minimal hair damage, can be obtained with lotions containing an ammonium ion concentration of 0.55 weight percent or less based on the total composition weight, while at the same time having a water phase that accounts for 80 to 100 weight percent of the total composition. Studies have also indicated that hair lightening is not substantially affected by ammonia basicity, i.e. the ammonia may nominally be present as either free NH<sub>3</sub>·H<sub>2</sub>O or as the neutralized ammonium ion,
NH<sub>4</sub>+. From A cosmetic viewpoint, the ammonium ion is preferable to free ammonia.

Because of the equilibrium between NH<sub>3</sub>, NH<sub>3</sub>·H<sub>2</sub>O, NH<sub>4</sub>OH, NH<sub>4</sub>+ and OH<sup>-</sup>, it is not possible to have just one species present in an aqueous medium. The relative proportion of ammonia to ammonium can be shifted by pH, ionic strength, pressure and any other chemical technique that affects the concentration of each specie in the equilibrium constant. However, merely reducing 110 amine or quaternary ammonium content, without also maintaining the higher concentrations of water-soluble components, or vice versa, as taught herein does not provide satisfactory hair lightening results. Moreover, to try to compensate for the inferior lightening resulting from using lower amine or quaternary ammonium concentrations by either using high concentrations of peroxygen compounds, alkaline ingredients, longer time periods for bleaching the hair, or higher temperature during the 120 bleaching process will result in unsatisfactory damage levels to the hair. It is the intent of this invention to adjust the formula in such a way so as to favor the formation of ammonium ion and keep the concentration of free ammonia as close as practical to the value dictated by the equilibrium constant.

One of the essential ingredients present in the bleach compositions according to the invention herein is at least one percompound in a useful concentration range of about 2 to 20%, and preferably 6 to 8%. It is pointed out that % throughout the specifi-

cation are weight percent based on the total weight of the composition, unless otherwise indicated. The percompound provides an additional source of oxygen generation necessary for bleaching, other than hydrogen peroxide. Such percompounds are not limited to but can be selected from the ammonium-, alkali metal- and alkaline earth metal-perborates, persulfates, percarbonates, and carbonate peroxides. The term "alkali metal" and "alkaline earth metal" as used herein and throughout the specification are deemed to have their ordinary accepted meaning in the art.

It is also essential to have present hydrogen peroxide in a useful concentration range of about 1.5 to 7% to provide bleaching of the hair. Stabilizers for the hydrogen peroxide, such as phenacetin, may also be present in minor amounts. Preferably the hydrogen peroxide concentration is from about 3.2 to 3.7%.

A third essential ingredient is a water-soluble
amine or quaternary ammonium compound for providing necessary activation of the peroxide for enhanced bleaching, and also serving additionally as a pH adjusting agent and aiding in thickening the composition by the formation of water-soluble soap gels with fatty acids. The amine or quaternary

ammonium compound most often used, and that preferred, is ammonium hydroxide because of its ready availability and effectiveness as a peroxide activator. However, other less effective amines can

30 be used, typically in larger quantities, such as an amine or quaternary ammonium compound selected from the group consisting of at least one of morpholine, mono-, di-, trialkanolamine, and mono-, di-, and trialkylamine, wherein the alkyl or alkanol substituents have a carbon chain length of 1 to 4 carbon atoms.

As previously noted, it is critical that the ammonium ion concentration in the water phase of the bleaching composition be less than about 0.55% 40 to prevent the formation of more than trace amounts of ammonia gas by the composition during the hair bleaching process and thereby overcoming the problems associated with the prior art, producing cosmetically pleasing results. Therefore it is apparent 45 that the resulting ammonium ion concentration comes about from many factors not the least of which is the amount of ammonium compounds including ammonium percompounds present in the composition which are capable of ionizing in water 50 to form the ammonium ion. Also affecting the ammonium ion concentration is the amount of other compounds that react with (e.g. neutralize) the ammonium ion, such as fatty acid compounds. Finally, there are factors associated with the equilib-

Finally, there are factors associated with the equilibfirm in solutions between the ammonium ion, ammonium hydroxide, and ammonia gas. Furthermore, it is observed that the use of amines in place of ammonium hydroxide will not result in the formation of ammonium ion, but requires greater

60 amounts of the same because of lower efficiency compared to ammonium hydroxide.

It is essential to include from about 4 to 8% of at least one water-soluble surfactant thickener. These are well known to anyone skilled in the art. For example, 65 such water-soluble surfactant thickeners are those

described as "coupling agents" at column 5, line 29 to column 6, line 56 of U. S. Patent 3,811,830 to R. DeMarco issued May 21, 1974, and incorporated by reference herein. Additionally, useful are ethoxy-70 lated laurate esters of sorbitol and its anhydrides such as with 80 moles ethylene oxide (Tween 80); acid ethoxylates such as di-stearic acid with 150 moles ethylene oxide (PEG 6000 Distearate); and block copolymers of ethylene oxide and propylene 75 oxide (Pluronics). A preferred surfactant is cocoyl fatty acid ethoxylated with 8.5 moles of ethylene oxide.

The useful pH range for using the bleaching compositions as herein disclosed is from about 9 to 12, 80 although preferably it is about 9.7 to 10.3. Below the pH of 9, insufficient bleaching action occurs; whereas above 12 excessive hair damage occurs.

To maintain the proper pH range, a buffering agent or pH adjustment agent is found to be essen85 tial. In addition to the alkalinity provided by the amine or quaternary ammonium compounds, useful agents are the alkali metal metasilicates such as sodium metasilicate; alkali metal carbonate, orthometa- and tripolyphosphates.

90 Finally, water is an essential ingredient in providing the proper medium for the bleaching process to occur as previously discussed, and makes up the balance of the composition except for waterinsoluble ingredients and other optional additives.

95 Among the optional additive ingredients are sequestering agents for complexing metal ion inpurities which would tend to affect the stability of the hydrogen peroxide. Such sequestrants which may be present in a concentration up to about 0.5%
 100 and include the unneutralized and/or the alkali metal salts of nitrilotriacetic acid and alkylenepolyamine polycarboxylic acids having the formula

(HOOCCH₂)₂N[(CH₂)₂NCH₂COOH]₂CH₂COOH wherein x and y may vary independently from 1 to 4. 105 Representative of such acids are ethylenediaminetetraacetic acid and ethylenediaminetriacetic acid.

Also present may be up to about 1.5% of a viscosity modifier which can include water-soluble straight chain aliphatic alcohols (e.g. ethanol and butanol), aldehydes (e.g. acetaldehyde and butyraldehyde), ketones (e.g. acetone and 2-hexanone), and glycols (e.g. ethylene glycol and butylene glycol).

Additionally, the compositions can optionally include up to about 20% of at least one additional water-insoluble ingredient which includes for example, surfactants, perfumes, oils, opacifiers and dyestuffs (including dyes and dispersible pigments).

Such dyestuffs include for example, D & C Green 120 #6, FD&C Yellow #3, and pigments like ultramine blue and disperse blue 1.

Typical opacifiers include abietic/lauric ether polyesters, and polystyrene.

Oils include non-volatile oils such as mineral oil, 125 isopropyl myristate, diisopropyl adipate, and volatile or essential oils such as peppermint, clove oil, and eucalyptus oils.

Typical of the water-insoluble surfactants that can be used for thickening and emulsifying properties 130 are those well known in the art such as those dis\*

closed in U. S. Patent 3,811,830 to DeMarco at column 3, line 64 to column 5, line 6, which is incorporated by reference herein, called "oily materials."

Still other optional additives can include waterinsoluble fats and waxes derived from natural or synthetic sources (e.g. beeswax or spermaceti) and skin emmolients well known in the art.

It is again pointed out that the use of water-soluble surfactant thickeners are essential, optionally in combination with limited quantities of the aforementioned water-insoluble ingredients, to provide for a low ammonia bleach composition in accordance with the invention herein. It is pointed out that the use of natural gums (e.g. xanthum or guar gum) and cellulose-based thickening agents (e.g. carboxymethylcellulose derivatives) with or without solvents such as low molecular weight alcohols and ketones do not provide the necessary thickening properties for use herein. The gums and cellulose-

20 based agents being too difficult to conveniently mix

and requiring excessive time to hydrate in order to build the necessary viscosity to maintain the bleaching composition on the hair. Solvents which generally couple oil-soluble materials and water-soluble surfactants produce compositions with low viscosity and are unsuitable for bleaching keratin fibers.

In the examples that follow the test methods used for evaluating bleaching (i.e. hair lightening effectiveness) and alkaline solubility (i.e. hair damage) are described as follows.

Test Method for Evaluating Bleaching Effectiveness
Surfactants and their effect upon lightening and
damage were evaluated as part of a three component system. The system contained a powdered
35 activator, a lotion and a developer. The chemical
composition of the activator and developer were
kept constant with the lotion being the vehicle for the
evaluation of the surfactant. The activator had the
following composition:

40	ACTIVATOR

	Ingredient	Grams	W/W%
	(Na <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> )	2.1	9.05
	Sodium Lauryl Sulfate	0.5	2.15
45	Methocel 60 HG (Hydroxypropyl-		
7.0	methyl cellulose)	0.3	1.30
	Cabosil M5 (fumed Silica Dioxide)	0.3	1.30
	Potassium Persulfate	10.0	43.10
	Sodium Persulfate	10.0	43.10
50		<del></del>	
		23.2	100.00

The lotion consisted of 0.5% monoethanolamine (i.e. MEA) and 99.5% of the surfactant to be evaluated.

Bleaching tests were done as follows:

Twenty-three grams of activator were added to 4 oz. of a 6% aqueous hydrogen peroxide solution and shaken. Sixty grams of the test lotion was then added and shaken until thoroughly mixed. The pH 60 and viscosity of the mixture were then measured. The mixture was spread over and through a swatch or brown pigmented hair. The swatch consisted of a blend of commercially available virgin hair approximately nine inches long. The bleaching was accomp-65 lished in a glass dish placed atop a constant temperature bath set at 38°C. The bleaching time was one hour with the swatch being turned over and the bleach mixture "reworked" every fifteen minutes. At the end of one hour, the bleach mixture was rinsed 70 from the hair and the swatch shampooed with a mild shampoo. The swatch was then visually compared to a standard. If the swatches were comparable in lightening to the standard, the reflectance of each swatch was accurately measured at 560 m $\mu$  on a 75 Beckman DU-2 Spectrophotometer.

Where the surfactant was supplied as powdered solid material, the necessary MEA and solid surfactant are dissolved in the 6% hydrogen peroxide solution. The activator is then added to the resulting 80 lotion/peroxide mixture and shaken until uniform. The bleaching process is the same as previously described.

Test Procedure — Alkaline Solubility Test

Bleach hair swatches at 38°C. for 1 hour in bleaching composition. Then dry 1 gram sample of
bleached hair for 3 hours at 110°C. Weigh the dried
hair sample. Then immerse hair for 1 hour in 100 ml.
of 0.1 N sodium hydroxide at 66°C. Remove hair
from sodium hydroxide solution and rinse with distilled water. Follow with rinse of 1% acetic acid solution. Again rinse with distilled water. Dry hair swatch
for 3 hours at 110°C. Weight sample and calculate
weight loss. The greater the weight loss the greater
the hair damage that has occurred during the bleaching process.

The standard used was a commercially available Clairol Naturally Blonde Quick Lightening Kit comprising a three component system; 60 g. of lotion; 120 g. of developer and 28 g. of activator (208 g. 100 total). Percent composition is as follows:

	CHEMICAL NAME	WEIGHT%
	Lotion	- 45
	Ammonium Hydroxide (29% aqueous solution)	2.45
	Disodium ethylenediamine tetraacetic acid	0.30 3.75
5	Isopropanol	3.75 1.01
	Ethoxydiglycol <sup>1</sup>	1.59
	Ethoxylated nonylphenyl (10 moles of ethylene oxide)2*	10.10
	Oleic acid	10.10
	Polyethylene glycol ether of tridecyl alcohol (6 moles of ethylene oxide) <sup>3*</sup>	1.20
10	of ethylene oxide)*  Ethylhydroxymethyl oleyl oxazoline**	3.17
	Polyethylene glycol amine of Soya Acid (5 moles of	• • • • • • • • • • • • • • • • • • • •
	ethylene oxide) <sup>s</sup> *	3.17
	Water	2.22
.=	Fragrance	0.14
15	110912	
	Developer	
	Ethoxylated Nonviphenyl (4.0 moles of ethylene oxide) **	2.88
	Ethoxylated Nonylphenyl (9.0 moles of ethylene oxide)7	2.88
20	Cetyl Alcohol*	0.14
	Hydrogen Peroxide (50% aqueous solution)	7.96
	Water	44.68
	Activator	
25	Silica <sup>8</sup> *	0.20
20	Sodium metasilicate	1.82
	Sodium lauryl sulfate	0.16 0.16
	Disodium ethylenediamine tetraacedic acid	2.80
	Ammonium Persulfate	8.28
30	Potassium Persulfate	
		100.00
	1. Trade Name: Carbitol PM 600	
	2. Trade Name: Igepal DM 530	
35	3. Trade Name: Emulphogene BC-610	
	4. Trade Name: Alkaterge C	
	5. Trade Name: Varonic L 205	
	6. Trade Name: Igepal CO 430	
40	7. Trade Name: Igepal CO 630	
40	8. Trade Name: Cabosil M5	

Note: All of the oleic acid was converted to the water-soluble salt form.

45 This composition had an alkaline solubility of 30.2% (i.e. 30.2 wt.% of 1 g. sample dissolved in alkaline solution). Ammonium ion concentration – 1.70 wt./; water-soluble phase – 87.65 wt.%. In the Naturally Blonde composition and the examples that 50 follow, the designation "\*" indicates that the particular ingredient is not water-soluble or only slightly

lar ingredient is not water-soluble or only slightly water-soluble. Also, the wt. % of the water-soluble phase is determined by subtracting from 100% the wt. % of insoluble ingredients.

55 Additionally, the maximum ammonium ion concentration in the composition is determined by assuming complete ionization of the ammonium percompound and ammonium hydroxide.

In accordance with the aforementioned Bleaching 60 and Alkaline Solubility Test methods, bleaching compositions including the following water-soluble surfactant thickeners tested and gave comparable and satisfactory light reflectance and alkaline solubility levels as that for Naturally Blonde.

	,			
	Chemical Class		Trade Name	
	Ethoxylated primary fatty amine		Ethomeen C/25	
	Ethoxylated fatty acids		Ethofat 242/25	
	Ethoxylated dialkyl quaternary			
5			Ethoguad 18/25	
	Ethoxylated fatty alcohols		Brij <sup>R</sup> 35	
	Propoxylated fatty alcohols		Procetyl <sup>R</sup> 50	
	Ethoxylated lanolin		Solulan 75	
	Ethoxylated lanolin alcohols		Solulan 25	
10	Acetylated polyoxyethylene lanolin deriv	ativ	es Solulan 97	
	Nonylphenoxypoly(ethyleneoxy) types		Igepal CO-630	
	Polyethylene/propylene glycols		Pluronics/Carbowaxes	
	Polyethylene glycol 1000 monostearate		Collemol 510	
15	In the Everynles 4 4444-45-11		at a mark of the	
15	m the Examples i 14 that follow, the resulting		ration was 0.514 wt. %.	
	bleaching compositions had a pH of 9.8-10 and were		EXAMPLE 1	
	evaluated using the aforementioned test methods for bleaching and alkaline solubility, except where	25	,	20 g. of
	indicated atherwise providing similar light affect		developer; 28 g. of activator. (214 g. total) The	
20	indicated otherwise, providing similar light reflec- tance and solubility levels to that for Naturally		activator was mixed with the lotion and the p	
	Blonde. In Examples 8-14, the entire composition		developer was added to the lotion/activator n	
	was water-soluble and the ammonium ion concent-	20	Percent composition of the total mixture is as	i TOI-
		30	lows:	
	CHEMICAL NAME Lotion		WEIGHT %	
	Polyethylene glycol ether of Oleyl Alcoho	I /10		
	moles of ethylene oxide) <sup>1</sup>	. ( 10	14.02	
35	Oleic Acid		7.01	
-	Ethanol		4.67	
	Monoethanolamine		2.80	
	Ethoxylated nonylphenyl (49 moles of eth	vlen		
		,,	2.00	
40	Developer			
	Hydrogen Peroxide (50% aqueous solutio	n)	6.89	
	Water		49.18	
	Activator			
45	Potassium Persulfate		. 2.95	
	Ammonium Persulfate		0.92	
	Sodium Persulfate		2.95	
	Disodiumethylenediamine tetraacetic acid	d	0.13	
	Sodium meta silicate		6.15	
50			100.00	
	Water-soluble phase - 100%.		100.00 (23 moles of ethylene oxide)	0.40
	vvaler-soluble priase - 100%.			0.48
		75	Polyathylane alveol ather of Olayi Alcohol	
	Ammonium ion concentration – 0.15%	<b>7</b> 5	Polyethylene glycol ether of Oleyl Alcohol (10 moles of ethylene oxide) <sup>2</sup>	24.40
	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96	75	(10 moles of ethylene oxide) <sup>2</sup>	24.40
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880	75	(10 moles of ethylene oxide) <sup>2</sup> Ethanol	3.84
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the	75	(10 moles of ethylene oxide) <sup>2</sup>	
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.		(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine	3.84
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the		(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer	3.84 0.12
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g. bundle of		(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine	3.84 0.12 7.10
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair		(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution)	3.84 0.12
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1		(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution)	3.84 0.12 7.10
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair	80	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water	3.84 0.12 7.10 50.60
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray	80	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator	3.84 0.12 7.10
55	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained	80	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate	3.84 0.12 7.10 50.60
55 60	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.	80	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate	3.84 0.12 7.10 50.60 3.03 0.94
55 60	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2	80 85	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate	3.84 0.12 7.10 50.60 3.03 0.94 3.03
55 60	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g, of lotion; 120 g, of	80	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13
55 60 65	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g, of lotion; 120 g, of developer; 28 g, of activator (208 g, total) was mixed	80 85	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid Sodium Metasilicate	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13
55 60	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g. of lotion; 120 g. of developer; 28 g. of activator (208 g. total) was mixed as described in Example 1. Percent composition is as follows:	80 85	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid Sodium Metasilicate  Water-soluble phase – 100%.	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13 6.33
55 60 65	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g, of lotion; 120 g, of developer; 28 g, of activator (208 g, total) was mixed as described in Example 1. Percent composition is as follows:	80 85	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid Sodium Metasilicate  Water-soluble phase – 100%. Ammonium ion concentration – 0.15%	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13 6.33
55 60 65	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g, of lotion; 120 g, of developer; 28 g, of activator (208 g, total) was mixed as described in Example 1. Percent composition is as follows:  CHEMICAL NAME  WEIGHT %  Lotion	80 85 90	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid Sodium Metasilicate  Water-soluble phase – 100%. Ammonium ion concentration – 0.15% 1. Trade Name: Brij 35	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13 6.33
55 60 65	Ammonium ion concentration – 0.15%  1. Trade Name: Brij 96  2. Trade Name: Igepal DM 880  Note: All of the oleic acid was converted to the water-soluble salt form.  Lightening was measured in accordance with the test method procedure except that a 15 g, bundle of commercially available pigmented virgin hair approximately 9 inches long was bleached for 1 hour. The bleaching was conducted in a glass tray placed atop a constant temperature bath maintained at 39°C.  EXAMPLE 2  Three component system; 60 g, of lotion; 120 g, of developer; 28 g, of activator (208 g, total) was mixed as described in Example 1. Percent composition is as follows:  CHEMICAL NAME  WEIGHT %  Lotion	80 85 90	(10 moles of ethylene oxide) <sup>2</sup> Ethanol Monoethanolamine  Developer Hydrogen Peroxide (50% aqueous solution) Water  Activator Potassium Persulfate Ammonium Persulfate Sodium Persulfate Disodiumethylenediamine tetraacetic acid Sodium Metasilicate  Water-soluble phase – 100%. Ammonium ion concentration – 0.15%	3.84 0.12 7.10 50.60 3.03 0.94 3.03 0.13 6.33

6.33

100.00

EXAMPLE 3

Three component system; 66 g. of lotion; 120 g. of developer and 28 g. of activator (214 g. total) were mixed as previously described. Percent composition is as follows: 5 is as follows:

5	is as follows:		
		CHEMICAL NAME	WEIGHT %
		Lotion	
		Laurate esters of sorbitol and sorbitol anhydrides	
		condensed with 80 moles of ethylene oxide <sup>1</sup>	23.36
10		Polyethylene glycol ester of oleic acid (5 moles	
		of ethylene oxide) <sup>2*</sup>	4.67
		Monoethanolamine	2.80
		West of the second seco	
		Developer	
15		Hydrogen Peroxide (50% aqueous solution)	6.89
		Water	49.18
		Activator	
		Potassium Persulfate	2.95
20		Ammonium Persulfate	0.92
		Sodium Persulfate	2.95
		Disodium Ethylenediamine tetraacetic acid	0.13
		Sodium Metasilicate	6.15
			100.00
25			•
		Water-soluble phase – 95.33%.	•
		Ammonium ion concentration – 0.15%	•
		1. Trade Name: Tween 80	
		2. Trade Name: Emulphor VN-430	. •
30			
		•	
		•	
		EXAMPLE 4	
35		Three component system; 60 g. of lotion; 120 g. of	
35		developer and 28 g. of activator (208 g. total) were	
		mixed as previously described. Percent composition	
		is as follows:	
		13 23 10110413.	
40		CHEMICAL NAME	<b>WEIGHT</b> %
70		Lotion	
		Oleic Acid	6.34
		Ethoxylated Cocoyl Fatty Acid (8.5 moles of	
		Ethylene oxide)¹	9.23
45		Ethoxylated Nonylphenol (4.0 moles of ethylene oxide)*	3.10
•••		Polyethylene glycol amine of Soya Acid (5.0 moles	
		of ethylene oxide)3*	2.88
		Ethanol	1.55
		Polypropylene glycol ether of cetyl alcohol (5.0	
50		moles of ethylene oxide)4	5.77
50		Perfume	0.08
		Ammonium Hydroxide (59% aquous solution)	0.29
		/ IIIII o III o II o II o II o II o II	•
		Developer	
55	,	Hydrogen Peroxide (50% aqueous solution)	7.10
		Water	50.20
		Activator	
		Potassium Persulfate	3.03
60	)	Ammonium Persulfate	0.94
		Sodium Persulfate	3.03
		Disodiumethylenediamine tetraacetic acid	0.13
		Cadium Motopiliosto	6 33

Sodium Metasilicate

65

	Water-soluble phase – 94.02%	
	Ammonium ion concentration – 0.24%	
	1. Trade Name: Nu-Mole 7A-CM	
	2. Trade Name: Igepal CO-430	
5	3. Trade Name: Ethomeen S-15	
J	4. Trade Name: Procetyl 50	
	EXAMPLE 5	
	Two component system; 88 g. of activator is	
10	mixed with 120 g. of developer (208 g. total). Percent	
	composition is as follows:	
	CHEMICAL NAME	WEIGHT %
	Activator	
15	Ethoxylated nonylphenol (150 moles of ethylene oxide)	12.79
	Polyethylene glycol diester of stearic acid (150 moles	
	of ethylene oxide) <sup>2</sup>	0.78
	Palmitic acid <sup>3</sup>	2.19
20	Disodiumethylenediamine tetraacetic acid Sodium Metasilicate	0.26
20	Sodium Persulfate	11.75 5.88
	Potassium Persulfate	5.88
	Ammonium Persulfate	2.78
	· ····································	2.70
25	Developer	
	Ethoxylated nonylphenol (4.0 moles of ethylene oxide)4*	2.89
	Ethoxylated nonylphenol (9.0 moles of ethylene oxide)5	2.89
	Cetyl Alcohol*	0.14
	Hydrogen Peroxide (50% aqueous solution)	7.09
30	Water	44.68
		<del></del>
		100.00
	Ween and the share on one	
	Water-soluble phase – 96.97%. Ammonium ion concentration – 0.440%.	
35	1. Trade Name: Igepal DM-970	
	2. Trade Name: PEG 6000 Distearate	
	3. Trade Name: Neo-Fat 16	
	4. Trade Name: Igepal CO 430	
40	5. Trade Name: Igepal CO 630	
40		
	EXAMPLE 6	
•	Three component system; 60 g. of lotion; 120 g. of	
	developer and 29 g. of activator (208 g. total) were	
45	mixed as previously described. Percent composition	
	is as follows:	
	04544044 84445	
	CHEMICAL NAME	WEIGHT%
50	Lotion Oleic Acid	7 21
50	Ethoxylated Cocyl Fatty Acid (8.5 moles of ethylene	7.21
	oxide)1	6.35
	Ethoxylated nonylphenol (4.0 moles of ethylene oxide) <sup>2*</sup>	2.02
	Ethylhydroxymethyl oleyl oxazoline3*	3.97
55	Polyethylene glycol amine of Soya Acid (5.0 moles of	0.07
55	ethylene oxide)4*	2.88
	Ammonium hydroxide (59% aqueous solution)	0.29
	Ethanol	1.15
-	Polypropylene glycol ether of cetyl alcohol (5.0 moles	
60	of ethylene oxide) <sup>5</sup>	4.90
	Fragrance	0.07
	Davidana	
	Developer	7.45
05	Hydrogen Peroxide (50% of aqueous solution) Water	7.10
65	**alc:	44.70

	Cetyl Alcohol* Ethoxylated nonylphenyl (4 moles of ethylene oxide) <sup>2</sup> * Ethoxylated nonylphenyl (9 moles of ethylene oxide) <sup>6</sup>	0.14 2.88 2.88
5	Activator	
	Potassium Persulfate	3.03
	Ammonium Persulfate	0.94
	Sodium Persulfate	3.03
	Disodiumethylenediamine tetraacetic acid	0.13
10	Sodium Metasilicate	6.33
•		100.00
	Water-soluble phase – 88.11%	
15	Ammonium ion concentration - 0.24%	
	Alkaline solubility - 30.7%	
	1. Trade Name: Nu-Mole CM-7A	
	2. Trade Name: igepal CO-430	
	3. Trade Name: Alkaterge E	
20	4. Trade Name: Ethomeen S-15	
	5. Trade Name: Procetyl 50	
	6. Trade Name: Igepal CO-630	
	FXAMPI ES 8-14	

25	EXAMPLES 8-14							
20		#8	#9	#10	#11	#12	#13	#14
	NH₄OH (29%)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Nu-Mole CM-7A	8.0	x	4.0	x	4.0	×	×
	Laureth-40	x	8.0	4.0	×	x	x	×
30	PPG-50 Cetyl Ether <sup>2</sup>	×	X	x	8.0	4.0	×	x
	Nonyl Nonoxynol-49 <sup>3</sup>	x	×	×	×	x	8.0	×
	Peg 400 Monolaurate⁴	x	×	x	x	×	x	8.0
	K <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	x	4.0	4.0	2.0	4.0	4.0	4.0
	Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	4.0	×	×	2.0	x	x	×
35	H <sub>2</sub> O <sub>2</sub>	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	Sodium Metasilicate	6.2	6.2	6.2	6.2	6.2	6.2	6.2
	Water	74.8	74.8	74.8	74.8	74.8	74.8	74.8

- 1. Polyethylene glycol ether of lauryl alcohol (40 moles ethylene oxide).
- 2. Polypropylene glycol ether of cetyl alcohol (50 moles of ethylene oxide).
- 3. Ethoxylated dinonylphenol (49 moles of ethylene oxide).
- Polyethylene glycol ester of lauric acid (400 moles of ethylene oxide).

#### **CLAIMS**

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- 45 1. A thickened hair bleaching composition comprising a water phase, accounting for from about 80 to 100 weight percent of the total composition, said water phase comprising based on the total composition:
- 50 (a) 2 to 20 weight percent of at least one percompound selected from the group consisting of an ammonium-, alkali metal- and alkaline earth metal-perborate, persulfate, percarbonate, and carbonate peroxide;
- 55 (b) 1.5 to 7 weight percent of hydrogen peroxide;
  - (c) an amine or quaternary ammonium compound selected from the group consisting of ammonium hydroxide, morpholine, mono-, di-, and trialkanolamine, and mono-, di-, and trialkylamine,
- 60 wherein the alkyl or alkanol substituents have a carbon chain length of 1 to 4 carbon atoms;
  - (d) 4-8 weight percent of at least one watersoluble surfactant thickener;
- (e) a buffering agent for maintaining the com-65 position at a pH of from about 9 to 12; and

- (f) the balance is water, wherein the ammonium ion concentration in the water phase is less than about 0.55 weight percent based on the total composition resulting in substantially only trace amounts of ammonia gas produced as a result of interaction of these ingredients with each other or with hair.
- The composition of Claim 1 additionally containing up to about 0.5 weight percent of a sequestering agent.
  - The composition of Claim 1 additionally containing up to about 1.5 weight percent of a viscosity modifer selected from the group consisting of a water-soluble straight chain aliphatic alcohol, aldehyde, ketone, glycol, and mixtures thereof, having a carbon chain length of 1 to 6 carbon atoms.
  - 4. The composition of Claim 1 additionally containing up to about 20 weight percent of at least one additional water-soluble ingredient selected from the group consisting of surfactants, perfumes, cils, opacifiers, and dyestuffs.
    - 5. The composition of Claim 1 wherein said

10

water-soluble surfactant thickener is selected from the group consisting of:

(a) an alkylene glycol or an alkylene glycol ether alcohol or the formula:

### R<sup>5</sup>O(R<sup>6</sup>O)<sub>n</sub>R<sup>7</sup>OH

wherein R<sup>5</sup> is H or alkyl having 1 to 4 carbon atoms and R<sup>5</sup> and R<sup>7</sup> are divalent alkylene radicals having 2 to 4 carbon atoms and n is a number from 0 to 150;

(b) a long chain fatty acid soap of the formula (R°COO)<sub>a</sub>M

wherein R<sup>a</sup> is the hydrocarbon moiety of a long chain fatty acid having 10 to 20 carbon atoms, M is a monovalent or polyvalent salt-forming group and "a" is the valance of group M;

- (c) a long chain polyoxyalkylated compound selected from the group consisting of a polyoxyalkylated long chain fatty alcohol, a polyoxyalkylated polyhydroxyalkyl ester of a long chain fatty acid; a polyoxyalkylated long chain amine; a polyoxyalkylated long chain fatty acid; a polyoxyalkylated long chain fatty acid amide; a polyoxyalkylated long chain alkylphenol and polyoxyalkylated laurate esters of sorbitol and its anhydrides containing about 8 to 300 oxyalkyl groups in the structure; and
- 25 (d) mixtures thereof.
  - 6. The composition of Claim 5 wherein said percompound weight percent (a) is about 6 to 8.
  - 7. The composition of Claim 6 wherein said hydrogen peroxide weight percent (b) is about 3.2 to 3.7.
- 8. The composition of Claim 7 wherein said pH is about 9.7 to 10.3.
  - 9. The composition of Claim 8 wherein said water-soluble surfactant thickener (d) is cocoyl fatty acid ethoxylated with 8.5 moles of ethylene oxide.
  - A hair bleaching composition substantially as hereinbefore described in any one of the Examples.
  - 11. A method of bleaching hair, comprising the step of applying to the hair a composition in accordance with any one of Claims 1 to 10.
- 40 12. The ingredients of the composition of Claim 1 when sold in a multi-part package comprising as the first part of the percompound, as the second part the amine or quaternary ammonium compound, with the surfactant and the buffering agent being incor-45 porated in the first part or the second part or both, and with the hydrogen peroxide being supplied separately.
- 13. The ingredients of the composition of Claim 1 when sold in a multipart package comprising as the 50 first part the percompound, as the second part the amine, and as the third part the hydrogen peroxide, with the surfactant and the buffering agent being incorporated in the first part or the second part or both.

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